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ASTM B349/B349M-03

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ASTM B349/B349M-03 Standard Specification for Zirconium Sponge and Other Forms of Virgin Metal for Nuclear Application

Developed by Subcommittee: B10.02 |Book of Standards Volume: 02.04

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1. Scope

- 1.1 This specification covers one grade of virgin zirconium metal commonly designated as sponge because of its porous, sponge-like texture, but it may also take other forms such as chunklets.
- 1.2 The one grade described is designated as Reactor Grade R60001, suitable for use in nuclear applications. The main characteristic of the reactor grade is its low nuclear cross section as achieved by removal of hafnium. The manufacturer must use procedures to prevent contamination with other high cross-section materials.
- 1.3 Unless a single unit is used, for example corrosion mass gain in mg/dm², the values stated in either inch-pound or SI units are to be regarded separately as standard. The values stated in each system are not exact equivalents; therefore each system must be used independently of the other. SI values cannot be mixed with inch-pound values.
- 1.4 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

Index Terms

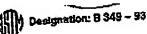
nuclear; virgin zirconium metal; zirconium sponge; ICS Number Code 27.120.99; 77.150.99

Citing ASTM Standards

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Standard Specification for Zirconium Sponge and Other Forms of Virgin Metal for Nuclear Application

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the standard. The values given in percentless are mation only.

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the cities for manufal under this specification de the following information, as required, to

designation, and A designation and year of boat.

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a to the thin specified in 3.1, the following whill he specified in the purchase order, if

ng (Section 14), and parmetics (see 6.2).

Marine Contract

mental is usually proposed by reduction of Monido, and gets its obysical characteristics to involved in production. These character-

Profession of printering of ASTM Committee B-10 and Friends and Albert and B for County responsibility of the Arrival and Estimate Separation 1873. Conjunity of June 13, 1979. Profession Separation 1873. Conjunity

of June 13, 1999, Published September 15 Delica provinces offician B 349 - 80 (1987) Del Suprimett, Well 1400.

inter may be expected to vary grantly with manufacturing methods. This specification, however, is not finited to metal prepared by reduction of tetrachloruse or to material of any

4.2 Only virgin zircurism metal, in identified, uniform, well-mixed blacks, that be supplied order this specification.

5. Chemical Composition

S.1 The streetimn metal supplied under this specification shall conform to the requirements for chemical composition prescribed to Table L

6. Sampling 6.1 A blind of spomer shall be sampled by running a full quantity through a proportioner or splitter to obtain a representative compile of at least 1 % of the bland weight. The method his splitting this sample and preparing an evaluation inset and compacted brightest shall be agreed upon between the maintainness and the purchases. One such method is by splitting using a Jones tille.

6.1.1 The evaluation input shall be greater than 30 lb (14

6.1.2 The compacted belonistic shall be at least 1 ib (0.5

62 When specified in the purchase order, a displicate for the purchase order, a displicate that the purchase and evaluation input shall sample or portions of the briquetty and evaluation input that be supplied to the perchants.

7. Methods of Chemical Analysis

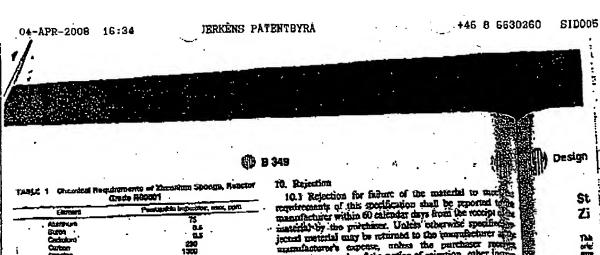
7.1 Preparation of Sample: 7.1.1 Compact the evaluation inger armole taken in accordance with Section 6 into a consumable electrode and ment to inget form in an are features of a type-conventionally unce for rescrive metals. The ingest shall be prepared for soulpois by sitter of the following two methods:

7,1.1.1 Take a longitudinal section through the center of the inges. Sample this section and analyze by appropriate means at a minimum of three phases the performancy equal intervals diagnosity from the top to the bottom of their section.

7.1.12 Samples for observing tests shall be taken from solid metal below the author perceity of the or cast inspir The samples shall be taken from a minimum of three places

equally speed along the axial length of the ingot.

7.2 Analytical samples for the determination of chincine must be taken from the spends, since this constituent is wolfelling in melting. Obtain this sample by drilling a compacted sample of the sponge or chinklets. Sample the beiquette by drilling, without water or other lubricant, a minimum of three beter, each % in. (9.53 mm) or larger in



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character, at come intervals on a circle, contentric with the rounded suither of the briquette. Reject dullings until the counces supram or the employee, seper similar one firstes of the drill are 1/4 in. (6.35 mm) below the surface of the injurent. Take the sample drillings from this point multiple point of the drill is within 1/4 in. of the opposite surface of the briquettes, Crush dailings taken in this manner to pass a No. 4 (4760 um) sieve and theretighly mix.

7.3 Analyze one of the samples taken in accordance with 7.1.1 for its manious consent. Applyer all samples when in Secondance with 7.1.1 for all elements listed in Table 1

emperation with 1.1.1 my an elements assess in 1800 I emper for chlorino and unanima.

7.4 Ambris—Analysis shall be made using the manifelo-iner's student methods. In the event of distinct countries in the chemical composition of the metal, chemical analysis for referee purposes shall be determined by a materialy deceptable between the section of the analogue for each course purposes mad be deformined by a materially eccept-shie laboratory. The average of the analyses for each impurity shall conform to the requirements of this specifica-tion, with no individual value greater than 30 % above the maximum specified limit for that impurity. Pressive E 29 shall be used to establish significant digits.

8.1 Zhoonium sponge suithfind under this specification shall past i in. (25.4 turn) screen and shall contain less than 2 %-20 meth particles.

9.1 Il my sample or specimen-schibits obvious ordininnation, or improper proparation, or flavor which discussify it as a representative sample, the sample shall be discarded and a new sample of specimen substituted.

jected meterial may be returned to the computations after memberships expense, notes the purchases received within three weeks of the notice of rejection, other longer tions to deposition.

11. Refere

11.1 In the event of disservment between the manufacturer and the parchaser on the conferences of the majorite to the requirements of this specification or any special for a pecifical by the purchaset, a manually securitate of the relation of the parties of the majorite that the first operation. The results of the relation of the relation of the period to the period of the peri trading shall be used in determining confermance of material to this specification.

12. Cardification

12. The manufacturer short couply at least one copy it is the manufacturer state supply at these one copy of the lot of bland of maintain supplied. Well quantities smaller than the manufactured standard being quantity the supplied, the bland such as that he considered manufactured of the lot.

13. Product Marking

13.1 The containers shall be leadily and permanent) marked with the following information:

13.1:1 Purchase turber nambes, 13.1:2 Name to material, 13.1:5 Particle one truggs,

13.14 Net weight. 13.1.5 ASTM designation, and

13.4.6 Date packed: .

14. Packaging and Package Maching

14.1 The method of packaging shall be as agreed upon-by 14.1 The method of packaging shall be as agreed upon by
the manufacturer and the prechaser. Packaging shall be such
as to seeme safe delivery when shapped by any common
curder. The ere and manure of the operations used an
generally determined by the times and length of storage and
the amount of handling involved. Where the hazards or
spouge densitionation during probaged storage are primary
considerations, represents sponge should be packed in any
tight, manufacturers should metal-come or drams which have
term backfilled with angon.

15. Keywords '

15.1 ancien, virgin premium metal, riccomium sponet .

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product is audied to restant at any sine by the emphasible intibilial committies and first ins reviewed many the years and had, Stipp paymoned or withdraws, Your committee are includ eather for engiglian of this securies of produced will be extinated to ASTM Hadefletties. Your committee will receive comfit forwidenties of a morting of the responsible of occurrings, writin you may clients. If you had the your committee form our received a not having your clients and receive the ASTM Committee on Countries of 1918 Road St., Pollential st., FA. 19107.

Scope

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11 hights are 3.1.1 R60001 3.1.2 R60802 3.1.3 R60804 31.4 R60901

4. Ordering 1

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4.12 Name

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